ARTIST Methodology Process Tool (MPT) Eclipse Plug-in

Overview

The MPT Eclipse plug-in serves as the basis of the MPT software, on top of which all MPT tools are integrated / connected. The MPT Eclipse plug-in carries composite cheat sheets and extensions to the Eclipse Welcome page for helping and guiding the user throughout the ARTIST phases and corresponding tools. Each MPT composite cheat sheet offers a group of simple cheat sheets, one for each ARTIST tool and/or process that is covered in the given methodology phase.

Figure 1 shows the ARTIST composite cheat sheet for the migration phase, which offers simple cheat sheets for each tool that is used during this phase. Note that the cheat sheets are tool-oriented and therefore there is no one-to-one mapping between the Methodology tasks and the cheat sheets that are listed for a specific ARTIST phase. Instead, one cheat sheet covers the usage of a given ARTIST tool or toolbox, and thus may cover multiple methodology tasks.

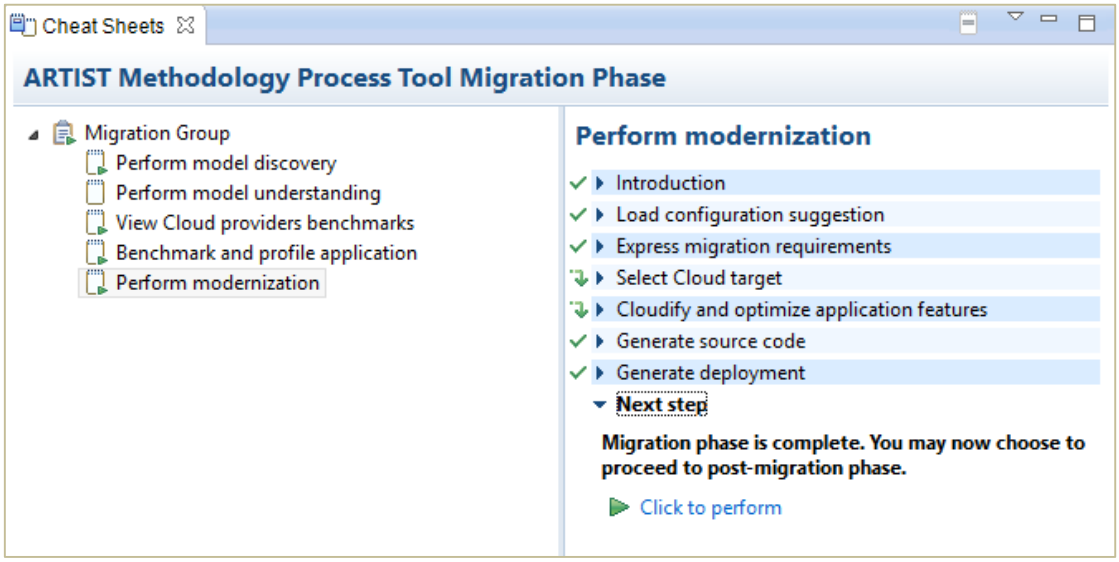

Figure 1: MPT Eclipse plug-in: Migration phase composite cheat sheet

Furthermore, the MPT Eclipse plug-in facilitates the immediate connection to other Eclipse-based or web-based ARTIST tools, as required by each task of the methodology. To this direction, the MPT Eclipse plug-in can automate activities such as opening wizards, views, dialogs, etc., which are provided by the other ARTIST tools, in order to make the usage of the tools easier and faster.

Due to its tool-oriented nature, the MPT Eclipse plug-in depends heavily on the maturity of the other ARTIST tools. Thus, it should be noted that the M30 version of the MPT Eclipse plug-in covers the majority of the ARTIST tools using information and the versions of the software that were available up to that point in time. Given that most of the ARTIST tools are currently evolving and have not reached their final version yet, included tutorials as well as their software and the way it has been integrated will be subjected to changes in future releases of the MPT Eclipse plug-in.

One of the main goals of the MPT, is to customize the migration and post migration phases according to the user preferences and the analysis results obtained during the pre-migration

phase. It should be noted at this point that, contrary to the migration and post-migration phase, and according to the requirements behind the MPT, the pre-migration phase should be common for all projects and consequently the pre-migration phase related cheat sheets are not customizable.

For customizing the migration and post-migration, the MPT takes as input the results produced at the end of the maturity assessment, and the technical and business analysis during the pre-migration phase, and use it to customize the next phases, both the EPF representation of the ARTIST Methodology as well as the cheat sheets. Currently, the identified rules depend on information obtained at the end of the Maturity assessment analysis, but will be expanded with new rules that are based on the results of the technical analysis and the business analysis.

Package information

Figure 2 shows the package structure of the MPT Eclipse plug-in software. It includes the following main folders and files:

- **src:** This folder contains the source files of the MPT plug-in, including handlers, actions and the activator of the plug-in.
- **resources:** It includes resource files that are used at runtime, such as the file with rules definition and files for logging purposes.
- **cheatsheets:** This folder contains the composite and simple cheat sheets descriptions.
- **dist:** This folder contains a binary distribution of the MPT plug-in.
- **intro:** It includes the files that contribute and extend to the Eclipse Welcome page.
- **lib:** It includes necessary libraries for the compilation and execution of the MPT plug-in.
- **META-INF:** This folder contains the plugin manifest file, MANIFEST.MF.
- **build.properties:** This file contains properties for building the plug-in.
- **plugin.xml:** This file describes how the MPT plugin extends the Eclipse platform and how it implements its functionality.
- **README.txt:** Includes installation and usage instructions.

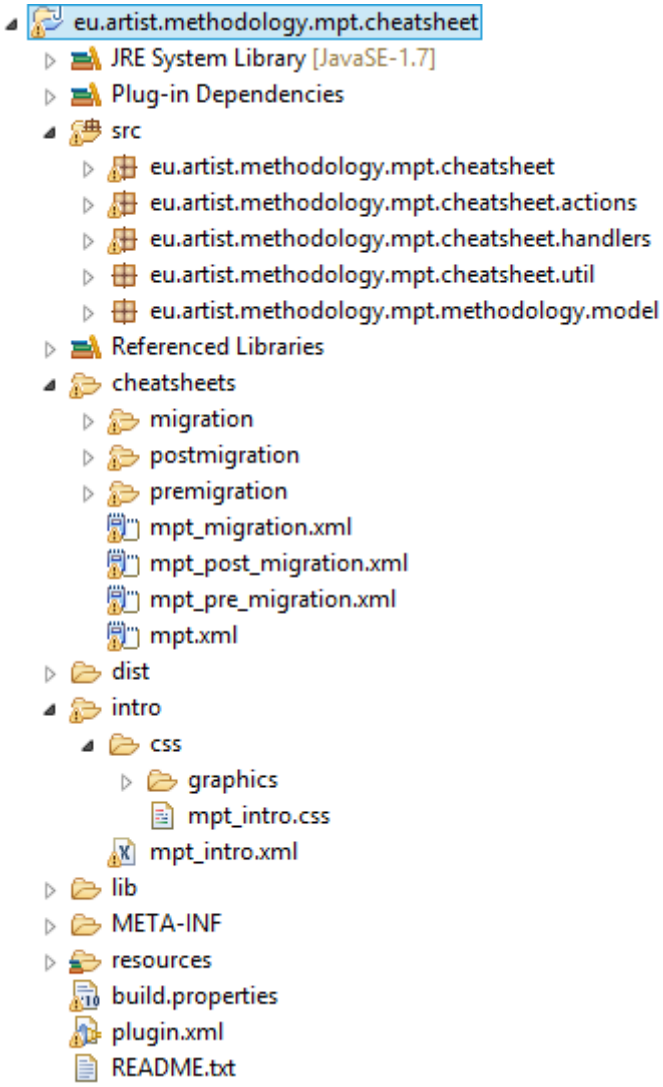

Figure 2: MPT Eclipse plug-in package structure

Installation instructions

The MPT Eclipse plug-in has been implemented and tested against Eclipse Java EE IDE for Web Developers, Version: Kepler Service Release 2 (recommended), and it requires Java v7. All required Java libraries are included within the distributed JAR of the plug-in.

The current version of the MPT plug-in has been integrated with the following ARTIST tools that are in the form of Eclipse plug-ins. Therefore these plug-ins should be installed prior to the MPT Eclipse plug-in installation. They can be downloaded from the ARTIST GitHub repository. For installing them please follow the related instructions included in their software distribution and make sure that all required dependencies are installed.

For installing the MPT Eclipse plug-in, the distributed JAR should be copied inside the 'plugins' folder of the Eclipse installation and then the latter should restarted for the changes to take effect.

User Manual

Upon successful installation of the MPT Eclipse plug-in, the Eclipse Welcome page will be automatically opened when the Eclipse is restarted for the first time. As highlighted in Figure 3,

an addition about the ARTIST project will be included in the "Overview" of the Eclipse Welcome page. This addition provides the end-user with the following two links:

(1) ***ARTIST Project:*** by clicking on this link, the ARTIST web site will open automatically in the Eclipse Welcome page.
(2) ***ARTIST Tools Tutorial:*** by clicking on this link, the Eclipse Welcome page "Tutorials" tab is automatically opened, whereby an addition about ARTIST can also be found (see Figure 4). This addition provides the end user with the following two links:
    a. ***Set MPT runtime preferences:*** Clicking on this link will automatically open the MPT runtime preferences. As shown in Figure 5, the end user can select a role among the ones that are available (i.e. Generic, Business or Application developer), as well as set some other runtime preferences such as the URL of the MPT Web App and also pre-select the MPT MAT report, in case it has been already obtained by the MAT. Note that the MPT MAT report, once set either by the user via the preferences or programmatically by the MPT after its download, is being persisted by the MPT in-between Eclipse restarts.
    b. ***Open MPT:*** By clicking on the latter, the ARTIST MPT cheat sheet about the Pre-migration phase is automatically opened in a new tab, as shown in Figure 6.

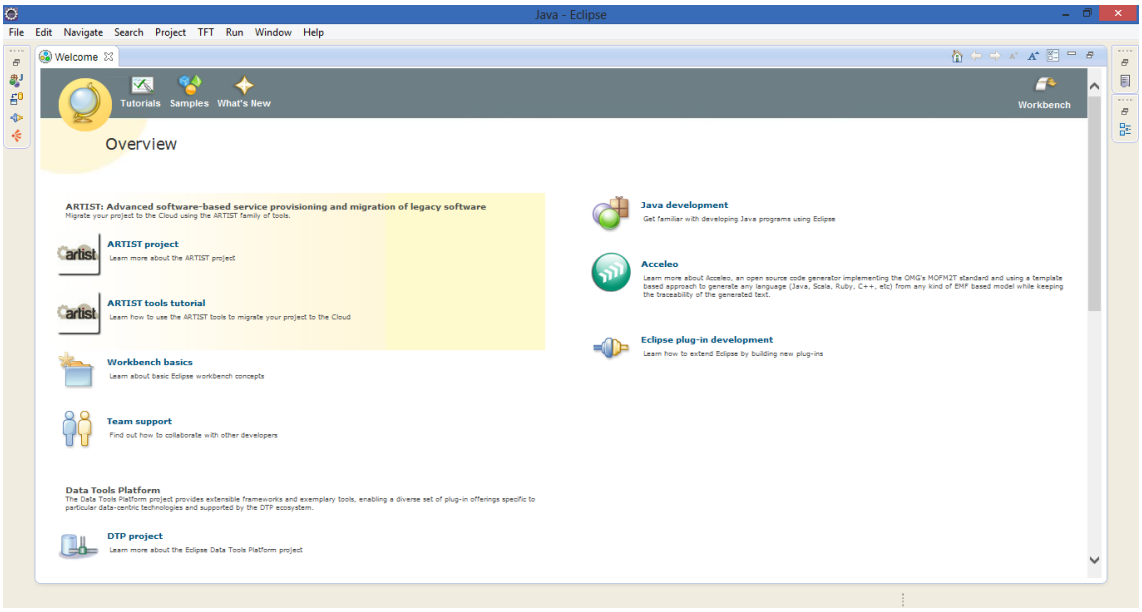

Figure 3: MPT's contribution to the Eclipse Welcome Overview Page

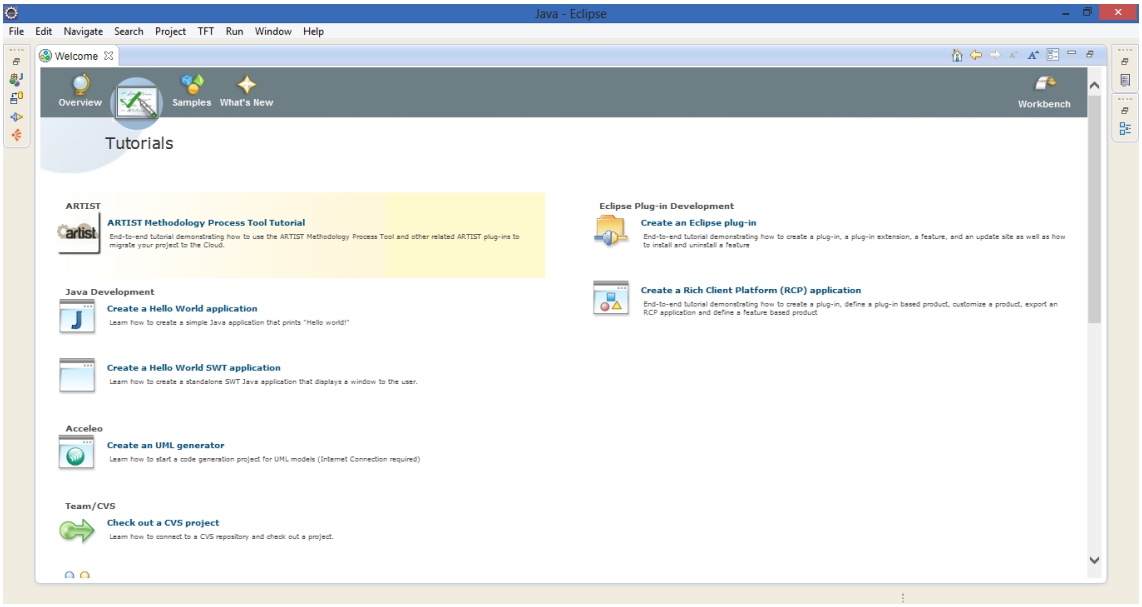

Figure 4: MPT's contribution to the Eclipse Welcome Tutorials Page

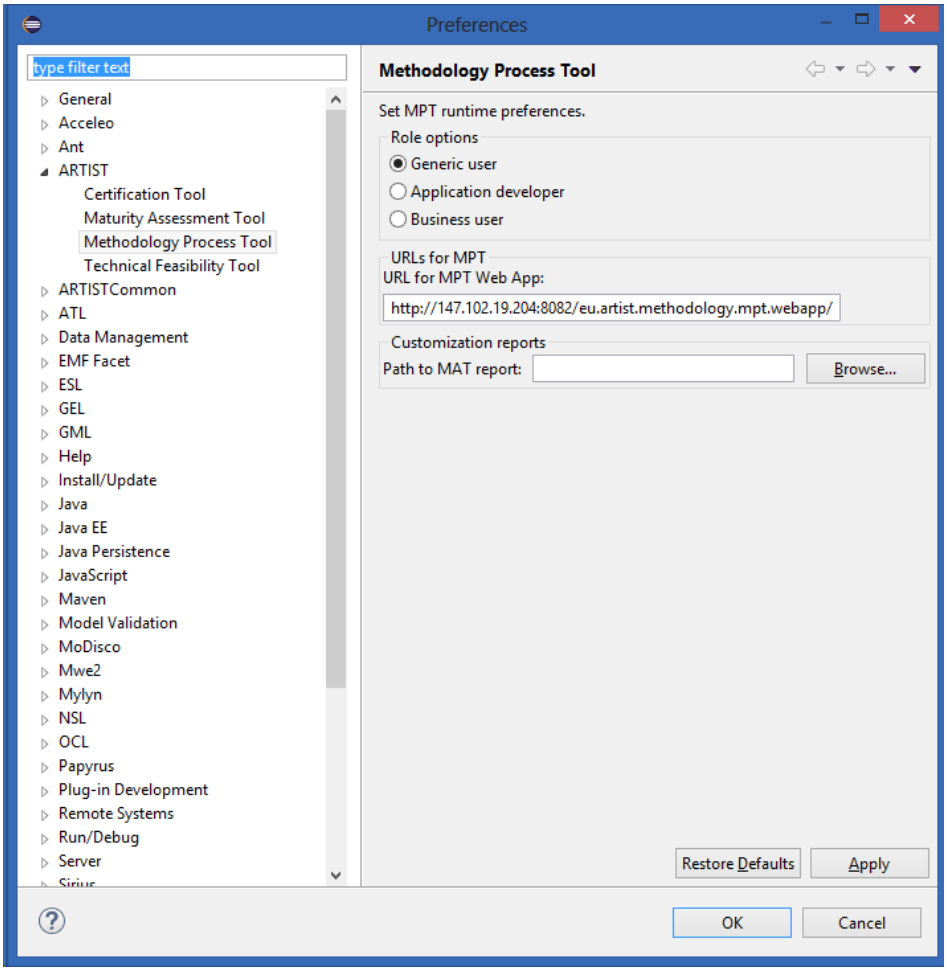

Figure 5: MPT's runtime preference page

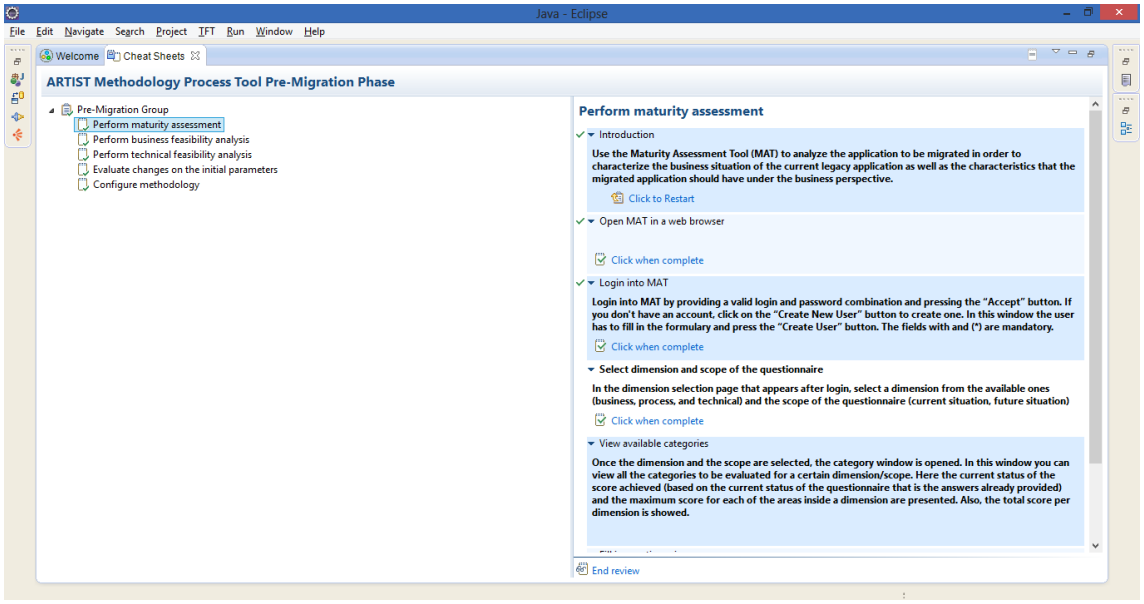
Java - Eclipse
File Edit Navigate Search Project TFT Run Window Help
Welcome Cheat Sheets
ARTIST Methodology Process Tool Pre-Migration Phase
Pre-Migration Group
Perform maturity assessment
Perform business feasibility analysis
Perform technical feasibility analysis
Evaluate changes on the initial parameters
Configure methodology
Perform maturity assessment
Introduction
Use the Maturity Assessment Tool (MAT) to analyze the application to be migrated in order to characterize the business situation of the current legacy application as well as the characteristics that the migrated application should have under the business perspective.
Click to Restart
Open MAT in a web browser
Click when complete
Login into MAT
Login into MAT by providing a valid login and password combination and pressing the "Accept" button. If you don't have an account, click on the "Create New User" button to create one. In this window the user has to fill in the formulary and press the "Create User" button. The fields with and (*) are mandatory.
Click when complete
Select dimension and scope of the questionnaire
In the dimension selection page that appears after login, select a dimension from the available ones (business, process, and technical) and the scope of the questionnaire (current situation, future situation)
Click when complete
View available categories
Once the dimension and the scope are selected, the category window is opened. In this window you can view all the categories to be evaluated for a certain dimension/scope. Here the current status of the score achieved (based on the current status of the questionnaire that is the answers already provided) and the maximum score for each of the areas inside a dimension are presented. Also, the total score per dimension is showed.
End review

Figure 6: Left: MPT Composite Cheat Sheet for Pre-migration phase. **Right:** expanded cheat sheet for Maturity Assessment Tool

Note that, apart from the Eclipse Welcome page, the MPT Cheat sheets can also be accessed by going to 'Help -> Cheat Sheets…', and then selecting the 'ARTIST' category. Under this 'ARTIST' category, three composite cheat sheets can be found, one for each methodology phase (pre-migration, migration and post-migration), as shown in Figure 7.

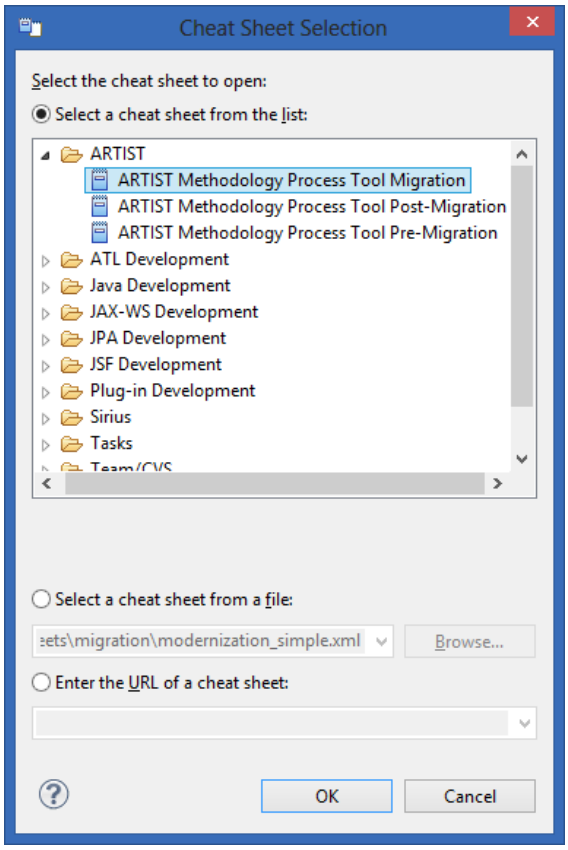

Figure 7: ARTIST Cheat Sheets selection

If these MPT extensions are not available after the MPT plug-in has been installed and the Eclipse has been restarted, then its installation has not been successful. In such a case, make sure that the all required plug-ins have been installed correctly, reinstall MPT and then restart Eclipse again.

As it can be seen on the left side of Figure 6, the ARTIST composite cheat sheet for the pre-migration phase covers the Methodology tasks and tools that are used in this phase:

- ***Perform maturity assessment:*** this covers the usage of the MAT tool and the consequently the methodology tasks, and consequently the activities, that use it as a supporting tool, i.e. TECHEVA and BUSEVA.
- ***Perform business feasibility analysis:*** this covers the usage of the BFT tool and the consequently the methodology tasks, and consequently the activities, that use it as a supporting tool, i.e. BUSFEAS.
- ***Perform technical feasibility analysis:*** this covers the usage of the TFT tool and the consequently the methodology task, and consequently the activities, that refer to it as a supporting tool, i.e. TECHFEAS.
- ***Evaluate changes on initial parameters:*** this covers the methodology task CHANGE (MPT itself supports this task).
- ***Configure methodology:*** this covers the corresponding methodology task, i.e. METHCUST, and it is supported by the web-based part of the MPT, namely the MPT Web App, which will be described in detail in what follows.

By clicking on one of the items listed above, the related cheat sheet will be opened on the right side of the pane. Figure 6 (right side) shows the cheat sheet for activity "Perform Maturity Assessment", where the various steps for performing this activity using the Maturity Assessment Tool (MAT) are being presented to the user. Once a step is complete, the cheat sheet automatically advances to the next step, and when all steps have been executed, then the user is prompted to advance to the next cheat sheet, which in this case is "Perform business feasibility analysis". Note that at the last step, the MPT automatically downloads the generated MPT MAT report by interfacing with MAT web service.

Figure 8 shows the cheat sheet titled 'Perform business feasibility analysis that covers the usage of the Business Feasibility Tool (BFT) in more detail. At each step of the cheat sheet tutorial, the user is presented with information for manually performing a specific action using the BFT, but is also given the alternative to allow the MPT to automatically perform this action or part of it by clicking on the green arrows at the left of each step of the cheat sheet. For example if the user clicks on the first green arrow, the MPT will automatically open the Sirius Modeling Project wizard so that the user does not have to manually execute the described sequence in order to open it.

Another integration example of an MPT cheat sheet is presented in Figure 9, which covers the usage of the Technical Feasibility Tool (TFT). At the first step of the cheat sheet, the user is prompted to locate the Migration Goals report that was produced during one of the previous steps in the pre-migration phase. In order to facilitate this action, the MPT offers a file dialog (see Figure 10) that filters the files in the Eclipse workspace using the *.gml* extension, to make this process easier and faster. The file dialog is activated by clicking on the green arrow, as highlighted by the red frame in Figure 9. Following the selection of the MAT report, the user is able to automatically open it in the 'Migration Goals View', which is a custom view that the TFT offers (Figure 9, green frame). Similar activities such as opening wizards, views, dialogs, etc., which are provided by the other ARTIST tools, are being automated by the MPT in order to make the usage of the tools easier and faster.

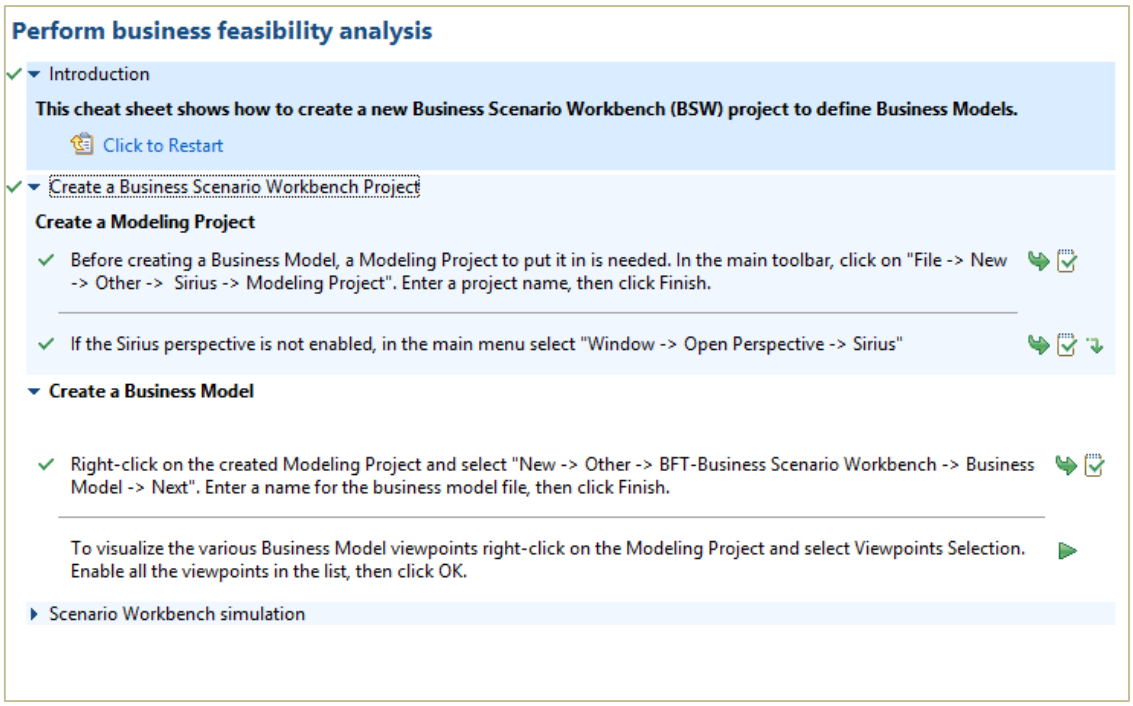
Perform business feasibility analysis
Introduction
This cheat sheet shows how to create a new Business Scenario Workbench (BSW) project to define Business Models.
Click to Restart
Create a Business Scenario Workbench Project
Create a Modeling Project
Before creating a Business Model, a Modeling Project to put it in is needed. In the main toolbar, click on "File -> New -> Other -> Sirius -> Modeling Project". Enter a project name, then click Finish.
If the Sirius perspective is not enabled, in the main menu select "Window -> Open Perspective -> Sirius"
Create a Business Model
Right-click on the created Modeling Project and select "New -> Other -> BFT-Business Scenario Workbench -> Business Model -> Next". Enter a name for the business model file, then click Finish.
To visualize the various Business Model viewpoints right-click on the Modeling Project and select Viewpoints Selection. Enable all the viewpoints in the list, then click OK.
Scenario Workbench simulation

Figure 8: BFT cheat sheet: example of integration

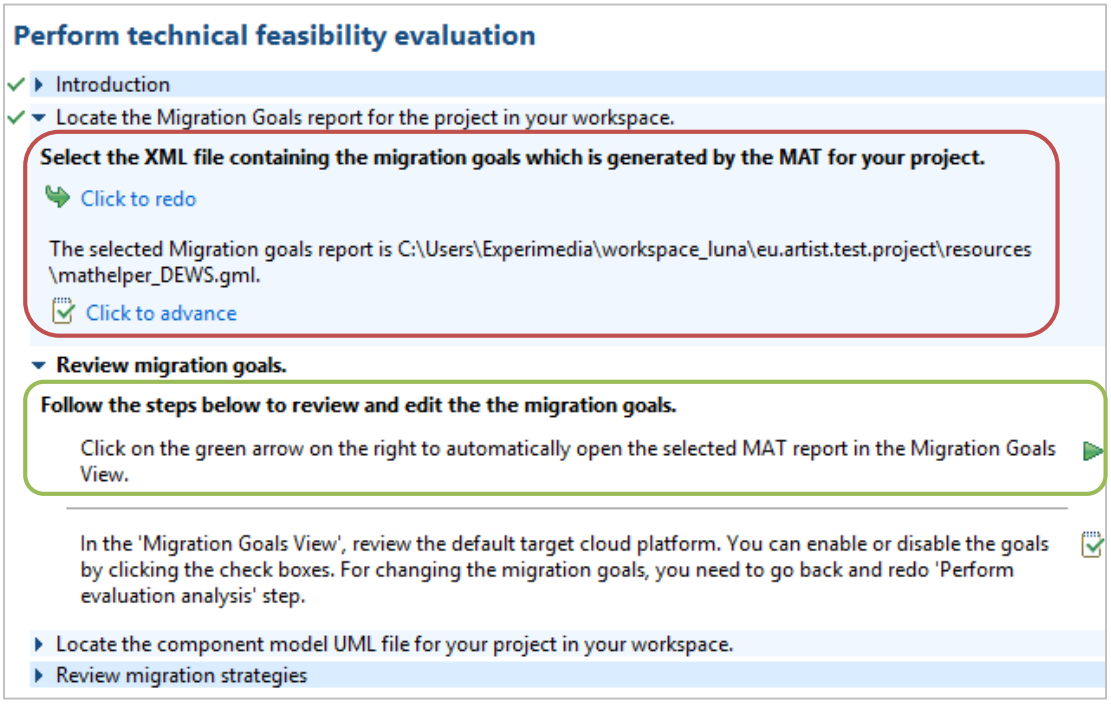
Perform technical feasibility evaluation
Introduction
Locate the Migration Goals report for the project in your workspace.
Select the XML file containing the migration goals which is generated by the MAT for your project.
Click to redo
The selected Migration goals report is C:\Users\Experimedia\workspace_luna\eu.artist.test.project\resources\mathelper_DEWS.gml.
Click to advance
Review migration goals.
Follow the steps below to review and edit the the migration goals.
Click on the green arrow on the right to automatically open the selected MAT report in the Migration Goals View.
In the 'Migration Goals View', review the default target cloud platform. You can enable or disable the goals by clicking the check boxes. For changing the migration goals, you need to go back and redo 'Perform evaluation analysis' step.
Locate the component model UML file for your project in your workspace.
Review migration strategies

Figure 9: TFT cheat sheet: example of integration

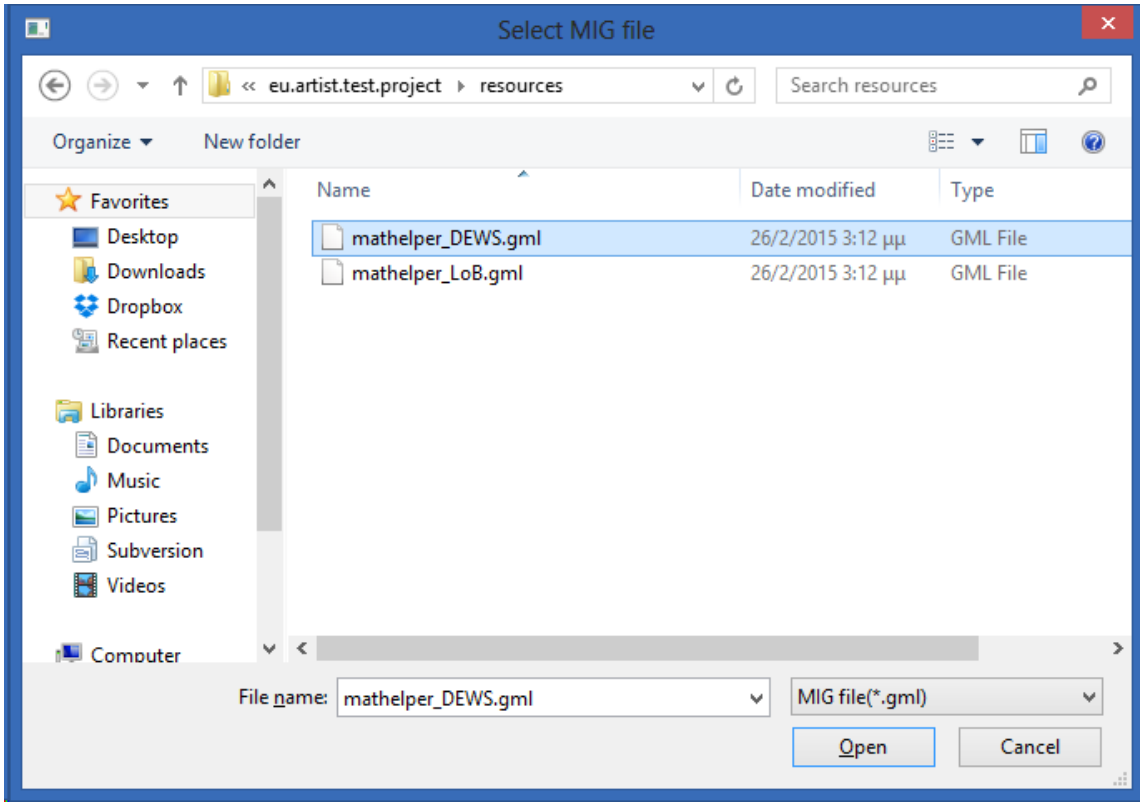

Figure 10: TFT cheat sheet: MPT supporting file dialog for selecting a Migration Goals file from the Eclipse workspace

Similar composite cheat sheets to the Pre-migration phase that cover the tasks and tools for the migration and the post-migration phase are included. At the last step of each phase, the user is offered a button to automatically progress to the next phase by closing the current composite cheat sheet, and opening the next one (see Figure 11).

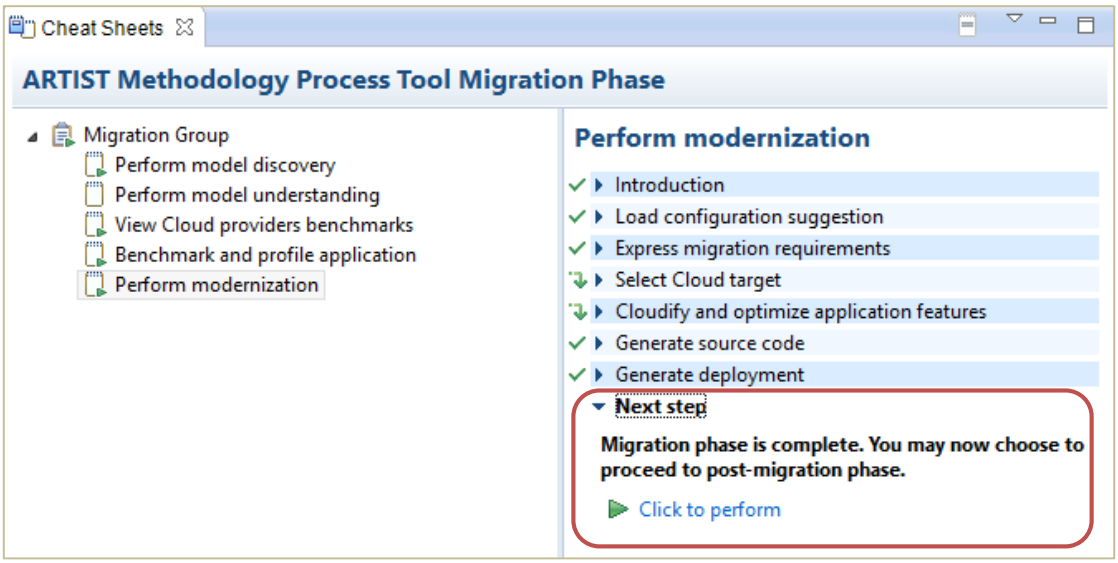

Figure 11: At last step of the Migration phase cheat sheet, the user can automatically progress to the Post-migration phase cheat sheet

As already explained, one of the major tasks for MPT is to customize the generic migration Methodology according to the results collected by the ARTIST Pre-migration tools. In this section we will describe how these results in the form of reports are being used by the MPT to do the following:

- Offer the user a configured web representation of the ARTIST Methodology coming out of the EPF composer through its web application part
- Seamlessly apply the same configuration in the cheat sheets and dynamically customize their structure and content prior to their presentation to the user.

To this direction, the focus will be shifted to the part of MPT that performs this customization. Figure 12 below shows the expanded cheat sheet for the last step of the pre-migration phase, which is where the actual configuration of the ARTIST methodology takes place.

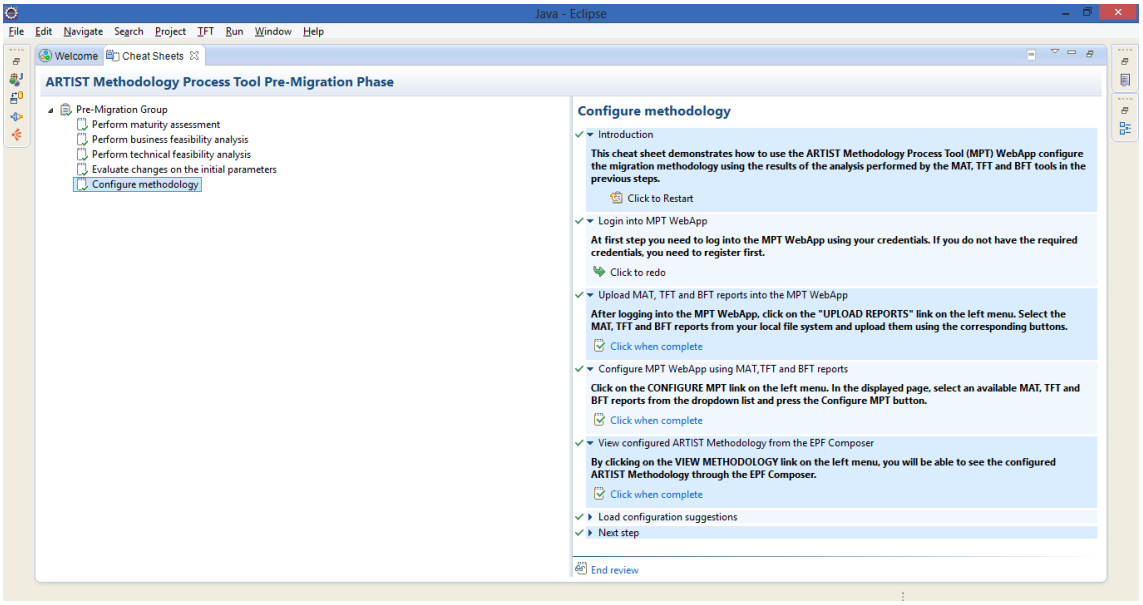
Java - Eclipse
File Edit Navigate Search Project TFT Run Window Help
Welcome
Cheat Sheets
ARTIST Methodology Process Tool Pre-Migration Phase
Pre-Migration Group
Perform maturity assessment
Perform business feasibility analysis
Perform technical feasibility analysis
Evaluate changes on the initial parameters
Configure methodology
Configure methodology
Introduction
This cheat sheet demonstrates how to use the ARTIST Methodology Process Tool (MPT) WebApp configure the migration methodology using the results of the analysis performed by the MAT, TFT and BFT tools in the previous steps.
Click to Restart
Login into MPT WebApp
At first step you need to log into the MPT WebApp using your credentials. If you do not have the required credentials, you need to register first.
Click to redo
Upload MAT, TFT and BFT reports into the MPT WebApp
After logging into the MPT WebApp, click on the "UPLOAD REPORTS" link on the left menu. Select the MAT, TFT and BFT reports from your local file system and upload them using the corresponding buttons.
Click when complete
Configure MPT WebApp using MAT,TFT and BFT reports
Click on the CONFIGURE MPT link on the left menu. In the displayed page, select an available MAT, TFT and BFT reports from the dropdown list and press the Configure MPT button.
Click when complete
View configured ARTIST Methodology from the EPF Composer
By clicking on the VIEW METHODOLOGY link on the left menu, you will be able to see the configured ARTIST Methodology through the EPF Composer.
Click when complete
Load configuration suggestions
Next step
End review

Figure 12: MPT Cheat Sheet for configuring the Methodology

The cheat sheet, as shown above, provides detailed information on how to use this the MPT Web App to obtain a configured visual representation of the ARTIST methodology through the EPF composer. For more information about the usage of the MPT Web App please see the documentation and video for the specific tool.

At the last step of the cheat sheet titled “Configure methodology”, the user arrives to the step titled “Load configuration suggestions”. By clicking on the provided green link (see Figure 13), the MPT results of the Rule Engine are now applied to the cheat sheets. In more detail, when a rule is met, the MPT customizes the default XML file of the migration or post-migration composite cheat sheet, by adding or removing elements. In the last step, where the user is asked to proceed to the migration phase, the customized cheat sheet of the migration phase will be presented to the user.

The following examples will demonstrate how the MPT is able to customize on the fly the ARTIST Methodology depending on the results collected during the pre-migration phase. In accordance to the customization of the EPF version of the ARTIST methodology, as described in the tutorial for the MPT Web App, the same rules are being applied in the cheat sheets, part of the MPT Eclipse plug-in.

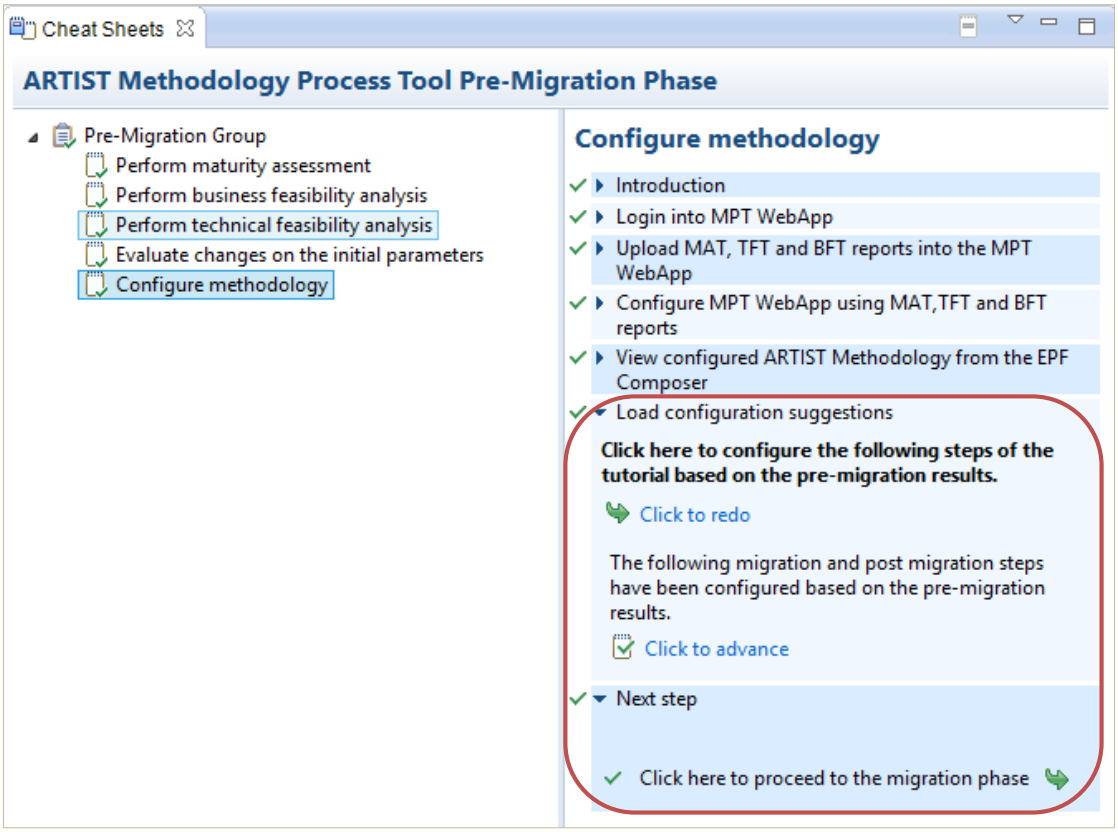
Cheat Sheets
ARTIST Methodology Process Tool Pre-Migration Phase
Pre-Migration Group
Perform maturity assessment
Perform business feasibility analysis
Perform technical feasibility analysis
Evaluate changes on the initial parameters
Configure methodology
Configure methodology
Introduction
Login into MPT WebApp
Upload MAT, TFT and BFT reports into the MPT WebApp
Configure MPT WebApp using MAT,TFT and BFT reports
View configured ARTIST Methodology from the EPF Composer
Load configuration suggestions
Click here to configure the following steps of the tutorial based on the pre-migration results.
Click to redo
The following migration and post migration steps have been configured based on the pre-migration results.
Click to advance
Next step
Click here to proceed to the migration phase

Figure 13: Automatic application of the configuration in the cheat sheets

Figure 14 shows the content of the "Migration phase" composite cheat sheet when the rules T_3 and T_7 are not satisfied, whereas Figure 15 shows the same cheat sheet when these rules are met. As it can be seen, from the latter cheat sheet the steps that are related to the "Target Environment Specification" tools (steps 'View Cloud providers' benchmarks' and 'Benchmark and profile application') have been removed from the Migration group activities and a new cheat sheet has been added with information about setting up a VPN (step 'Network setup') due to the activation of rule T_7.

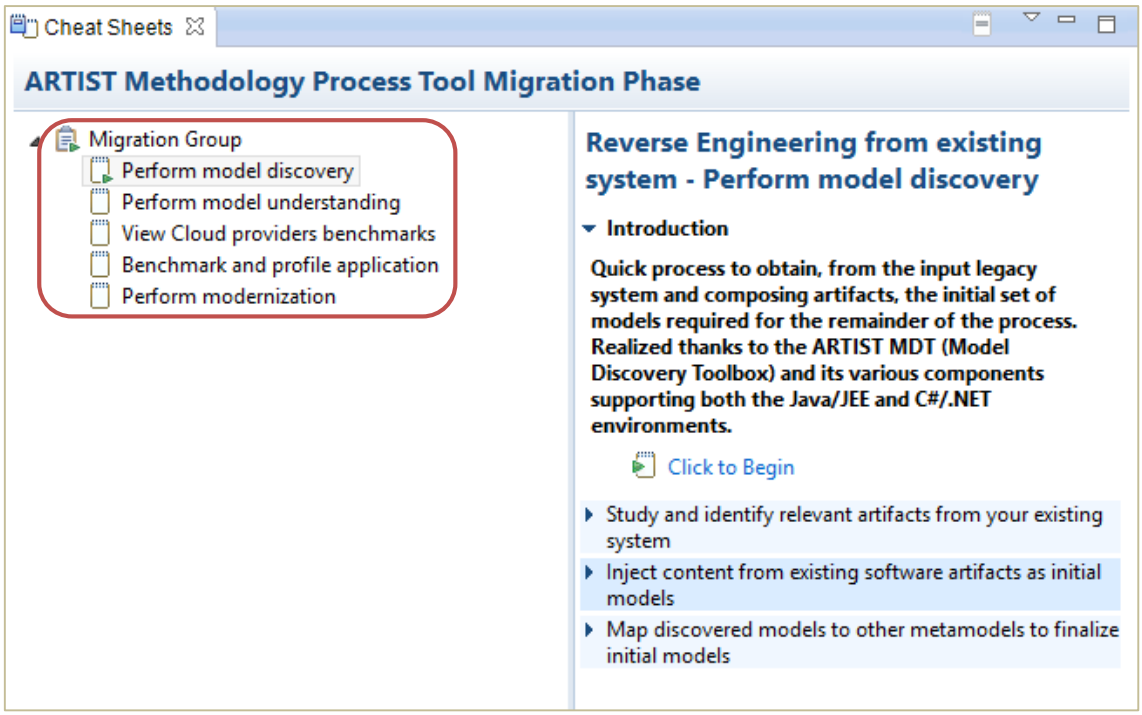
Cheat Sheets
ARTIST Methodology Process Tool Migration Phase
Migration Group
Perform model discovery
Perform model understanding
View Cloud providers benchmarks
Benchmark and profile application
Perform modernization
Reverse Engineering from existing system - Perform model discovery
Introduction
Quick process to obtain, from the input legacy system and composing artifacts, the initial set of models required for the remainder of the process. Realized thanks to the ARTIST MDT (Model Discovery Toolbox) and its various components supporting both the Java/JEE and C#/.NET environments.
Click to Begin
Study and identify relevant artifacts from your existing system
Inject content from existing software artifacts as initial models
Map discovered models to other metamodels to finalize initial models

Figure 14: Migration phase composite cheat sheet: rules T_3 and T_7 not satisfied

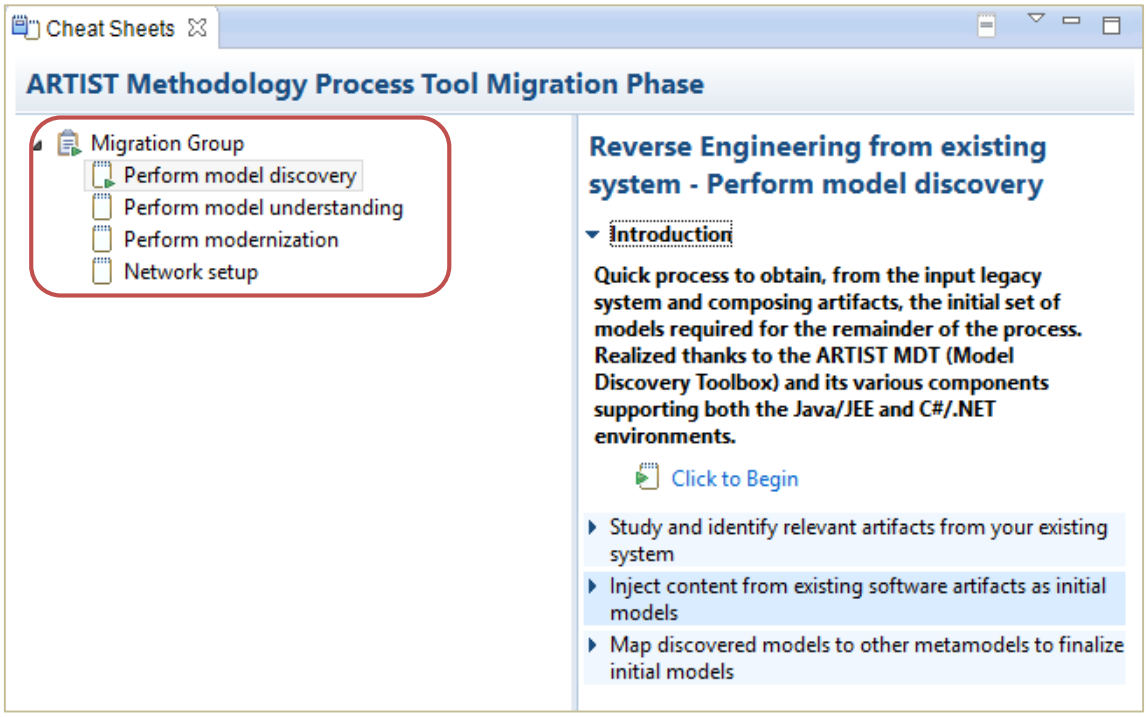
Cheat Sheets
ARTIST Methodology Process Tool Migration Phase
Migration Group
Perform model discovery
Perform model understanding
Perform modernization
Network setup
Reverse Engineering from existing system - Perform model discovery
Introduction
Quick process to obtain, from the input legacy system and composing artifacts, the initial set of models required for the remainder of the process. Realized thanks to the ARTIST MDT (Model Discovery Toolbox) and its various components supporting both the Java/JEE and C#/.NET environments.
Click to Begin
Study and identify relevant artifacts from your existing system
Inject content from existing software artifacts as initial models
Map discovered models to other metamodels to finalize initial models

Figure 15: Migration phase composite cheat sheet: rules T_3 and T_7 satisfied

At this point it should be noted that the MPT is also able to customize the cheat sheets according to the role that the user has selected in the MPT Runtime preferences (see Figure 5). If the user selects the 'Generic' role then the migration cheat sheet includes all migration tasks (i.e. technical, process and business), as shown in Figure 16. In case the user selects the 'Business' role, then the technical tasks are being removed from the migration cheat sheets (see Figure 17). Instead, if the user selects the 'Application developer' role, then all the

business and process tasks are removed, and only the technical related tasks remain in the cheat sheet, as shown in Figure 18.

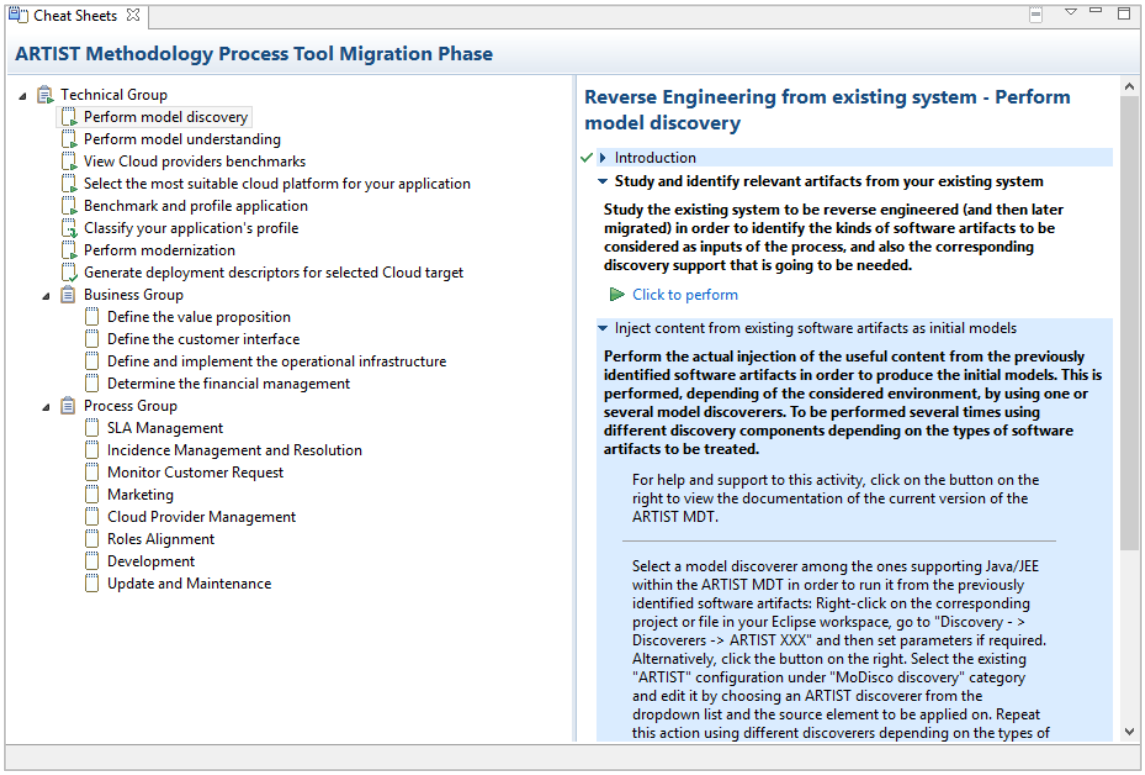
Cheat Sheets
ARTIST Methodology Process Tool Migration Phase
Technical Group
Perform model discovery
Perform model understanding
View Cloud providers benchmarks
Select the most suitable cloud platform for your application
Benchmark and profile application
Classify your application's profile
Perform modernization
Generate deployment descriptors for selected Cloud target
Business Group
Define the value proposition
Define the customer interface
Define and implement the operational infrastructure
Determine the financial management
Process Group
SLA Management
Incidence Management and Resolution
Monitor Customer Request
Marketing
Cloud Provider Management
Roles Alignment
Development
Update and Maintenance
Reverse Engineering from existing system - Perform model discovery
Introduction
Study and identify relevant artifacts from your existing system
Study the existing system to be reverse engineered (and then later migrated) in order to identify the kinds of software artifacts to be considered as inputs of the process, and also the corresponding discovery support that is going to be needed.
Click to perform
Inject content from existing software artifacts as initial models
Perform the actual injection of the useful content from the previously identified software artifacts in order to produce the initial models. This is performed, depending of the considered environment, by using one or several model discoverers. To be performed several times using different discovery components depending on the types of software artifacts to be treated.
For help and support to this activity, click on the button on the right to view the documentation of the current version of the ARTIST MDT.
Select a model discoverer among the ones supporting Java/JEE within the ARTIST MDT in order to run it from the previously identified software artifacts: Right-click on the corresponding project or file in your Eclipse workspace, go to "Discovery - > Discoverers -> ARTIST XXX" and then set parameters if required. Alternatively, click the button on the right. Select the existing "ARTIST" configuration under "MoDisco discovery" category and edit it by choosing an ARTIST discoverer from the dropdown list and the source element to be applied on. Repeat this action using different discoverers depending on the types of

Figure 16: Migration phase composite cheat sheet: Generic user role

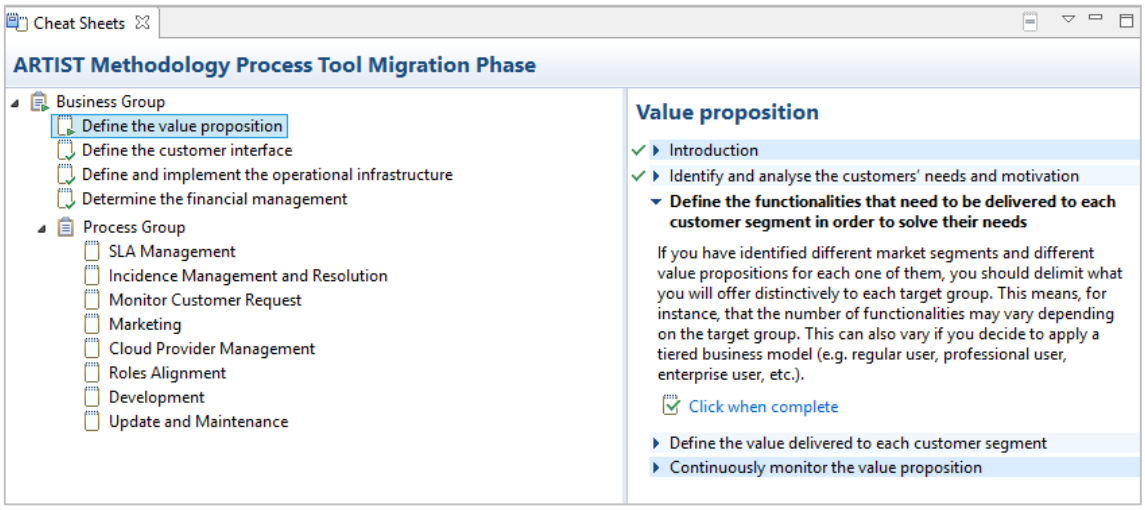
Cheat Sheets
ARTIST Methodology Process Tool Migration Phase
Business Group
Define the value proposition
Define the customer interface
Define and implement the operational infrastructure
Determine the financial management
Process Group
SLA Management
Incidence Management and Resolution
Monitor Customer Request
Marketing
Cloud Provider Management
Roles Alignment
Development
Update and Maintenance
Value proposition
Introduction
Identify and analyse the customers' needs and motivation
Define the functionalities that need to be delivered to each customer segment in order to solve their needs
If you have identified different market segments and different value propositions for each one of them, you should delimit what you will offer distinctively to each target group. This means, for instance, that the number of functionalities may vary depending on the target group. This can also vary if you decide to apply a tiered business model (e.g. regular user, professional user, enterprise user, etc.).
Click when complete
Define the value delivered to each customer segment
Continuously monitor the value proposition

Figure 17: Migration phase composite cheat sheet: Business user role

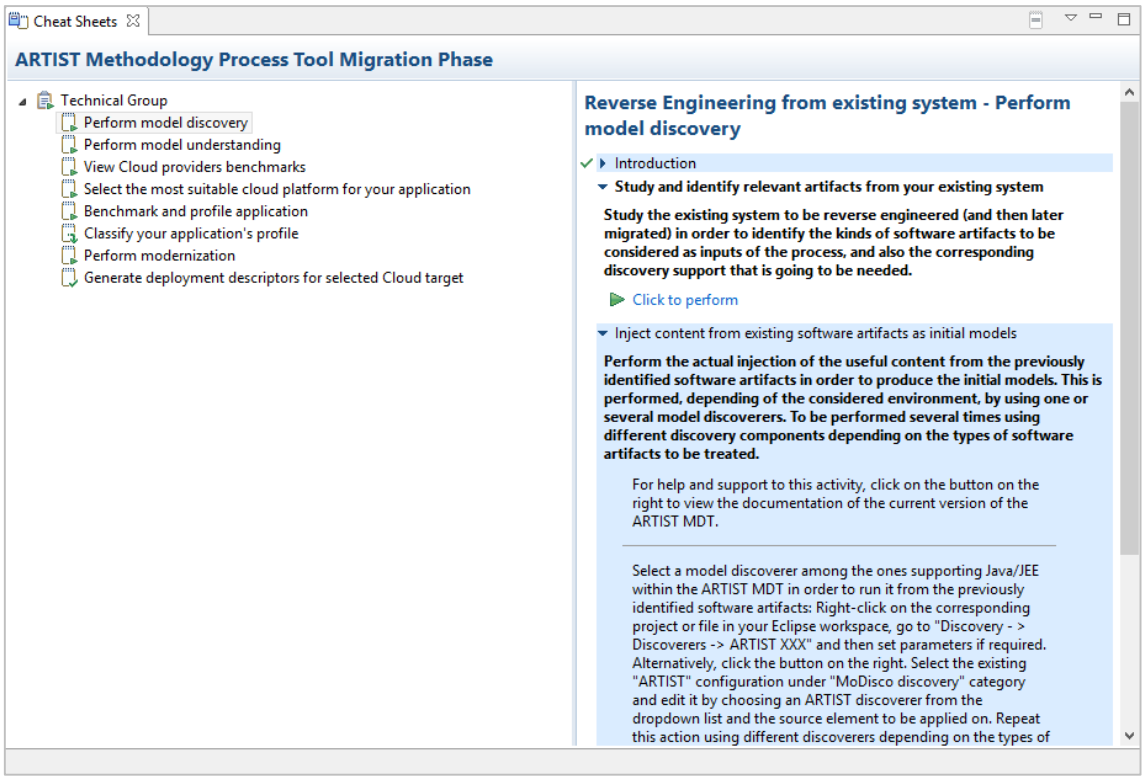
Cheat Sheets
ARTIST Methodology Process Tool Migration Phase
Technical Group
Perform model discovery
Perform model understanding
View Cloud providers benchmarks
Select the most suitable cloud platform for your application
Benchmark and profile application
Classify your application's profile
Perform modernization
Generate deployment descriptors for selected Cloud target
Reverse Engineering from existing system - Perform model discovery
Introduction
Study and identify relevant artifacts from your existing system
Study the existing system to be reverse engineered (and then later migrated) in order to identify the kinds of software artifacts to be considered as inputs of the process, and also the corresponding discovery support that is going to be needed.
Click to perform
Inject content from existing software artifacts as initial models
Perform the actual injection of the useful content from the previously identified software artifacts in order to produce the initial models. This is performed, depending of the considered environment, by using one or several model discoverers. To be performed several times using different discovery components depending on the types of software artifacts to be treated.
For help and support to this activity, click on the button on the right to view the documentation of the current version of the ARTIST MDT.
Select a model discoverer among the ones supporting Java/JEE within the ARTIST MDT in order to run it from the previously identified software artifacts: Right-click on the corresponding project or file in your Eclipse workspace, go to "Discovery - > Discoverers -> ARTIST XXX" and then set parameters if required. Alternatively, click the button on the right. Select the existing "ARTIST" configuration under "MoDisco discovery" category and edit it by choosing an ARTIST discoverer from the dropdown list and the source element to be applied on. Repeat this action using different discoverers depending on the types of

Figure 18: Migration phase composite cheat sheet: Application developer role

Licensing information

All MPT components are open source pieces of software available under the MIT License.

Download

The MPT Eclipse plug-in M30 release, both source and binaries, are available to the public through the ARTIST public GitHub repository:

Source:

https://github.com/artist-project/ARTIST/tree/master/source/Tooling/methodology/methodology process tool/MPT Eclipse plugin

Binaries:

https://github.com/artist-project/ARTIST/tree/master/binary/MPT/MPT Eclipse plugin